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10/582,743	06/13/2006	Seok Soo Kim	930086-2029	5014

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Ronald R Santucci
Frommer Lawrence & Haug
745 Fifth Avenue
New York, NY 10151

EXAMINER	
BLAND, LAYLA D	
ART UNIT	PAPER NUMBER
1623	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,743	KIM ET AL.	
	Examiner	Art Unit	
	LAYLA BLAND	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,15,16 and 18-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,15,16 and 18-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This office action is a response to Applicant's amendment submitted January 27, 2009, wherein claims 1 and 5 are amended, claim 7 is canceled, and claim 21 is newly submitted. Claims 1-6, 15, 16, and 18-21 are pending and are examined on the merits herein.

In view of the cancellation of claims 5 and 7, all rejections made with respect to those claims in the previous office action are withdrawn.

In view of Applicant's amendment submitted January 27, 2009, the objection to claims 5-7 and 20 for being of improper dependent form is withdrawn.

In view of Applicant's amendment submitted January 27, 2009, the rejection of claims 1-7, 15, 16, and 18-20 under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, is withdrawn.

In view of Applicant's amendment submitted January 27, 2009, all prior art rejections made in the previous office action are withdrawn in favor of the following new rejection.

The following new ground of rejection was necessitated by Applicant's amendment submitted January 27, 2009, wherein the scope of the claims was changed to require production of a fibrous product, to require a filtering and drying step, and to require the etherifying agent to contain both an alkyl halide and an alkylene oxide.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 15, 16, and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haidasch et al. (US 3,251,825, may 17, 1986, of record) in view of Onda et al. (US 4,091,205, May 23, 1978, PTO-1449 submitted June 13, 2006), Hitchin et al. (GB 909,039, October 24, 1962, of record), Anderson et al. (US 2,647,064, July 28, 1953), and Schminke et al. (US 3,903,075, September 2, 1975).

Haidasch et al. teach a process for the preparation of mixed cellulose allyl ethers, comprising reaction of alkali cellulose with a low alkyl halide, a low oxalkylating agent and an allyl halide, simultaneously or in any order desired, at raised temperature, and in the presence of organic solvent [column 1, lines 21-28]. Suitable alkali cellulose can be prepared from pulverized cellulose and sodium hydroxide [column 1, lines 29-34]. Methyl chloride, allyl chloride, and ethylene oxide are among preferred etherifying agents [column 1, lines 46-60]. Alkali cellulose containing 1.2-5 moles of alkali can be reacted in one operation with 1.2-4.5 moles of ethylene oxide, 0.7-3 moles of methyl chloride and 0.45-2.0 moles of allyl halide [column 2, lines 28-33]. Etherification is performed at elevated temperature, preferably between 40-100°C, and gradually increasing temperatures may be applied, for a reaction period between about 1-10

hours [column 2, lines 45-59]. Organic solvents may be utilized to obtain a uniform reaction [column 2, lines 60-62]. After the reaction is complete, excess solvent or etherification agent is drawn off and the product washed with hot water and dried in a dryer or by use of a vacuum. If the product is alkaline, it can be neutralized using acetic acid [column 2, line 67 - column 3, line 3].

Haidasch do not teach the claimed stepwise temperature elevation, do not teach an amount of diluent gas, do not exemplify filtration as a method of drawing off excess solvent, and do not teach the physical characteristics of the product, such as bulk density and particle distribution rate.

Onda et al. teach a process for preparation of low-substituted cellulose ethers [see abstract]. The method for the etherification step is conventional, including reaction with an alkyl chloride or alkylene oxide at a temperature from 20-90°C [column 2, lines 25-31]. In one example, etherification was carried out using 15 parts of methyl chloride using stepwise elevation of temperature: 40°C for 2 hours, 50°C for 1 hour, and 80°C for 1 hour [column 6, Example 2]. In another example, alkali cellulose was reacted with 10.5 parts propylene oxide at 40°C for 1 hour, 50°C for 1 hour, and 70°C for 1 hour [column 4, Example 1].

Hitchin et al. teach the use of an inert diluent in the methylation of alkali cellulose with methyl chloride. Suitable diluents are dimethyl ether and diethyl ether. In diluting the methyl chloride, heat transfer is facilitated and the reaction can be controlled. The diluent also functions as a vehicle in assisting the penetration of the alkali cellulose fibers by methyl chloride. The amount of diluent varies but good results were achieved

using dimethyl ether as 45-90 percent by weight of methyl chloride [page 1, lines 61-78]. In one example, 600 lb of dimethyl ether was used for 320 lb of dry cellulose [page 2, Example 1].

Anderson et al. teach that fibrous methyl cellulose may be obtained directly from an operation wherein methyl cellulose is made by etherification of alkali cellulose and washed with hot water [column 2, lines 51-55]. The product may then be ground if desired [column 3, lines 9-10].

Schminke et al. teach a process for preparing hydroxybutyl cellulose [see abstract]. The alkali cellulose is prepared from pulverized cellulose [column 2, lines 8-15] After reaction, the cellulose ether product is separated by filtration and washed with water. During washing with water, alkali hydroxide is washed away and the cellulose ether can be used as such [column 2, lines 53-61]. The cellulose ether, after reaction, is in a finely divided form [column 3, lines 33-39].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the process of Haidasch, using the stepwise temperature elevation taught by Onda, including dimethyl ether or diethyl ether as a diluent gas, and using filtration as the method of separating excess solvent from the product. Haidasch teaches that gradual temperature elevation may be used, and Onda teaches an etherification which is “conventional," and which includes temperatures ranges which overlap, or are very close to, the claimed ranges. Thus, the skilled artisan could use the guidance provided by Onda to carry out a conventional etherification via Haidasch's process. Haidasch teaches that an organic solvent may be used in the

reaction, but does not explicitly teach an amount of solvent with respect to the weight of cellulose. Hitchin et al. teach that the use of dimethyl ether at about twice the weight of cellulose is advantageous for methylation of alkali cellulose. Thus, the skilled artisan could expect good results using the Hitchin's teachings as guidance. Schminke et al. teach that filtration is one method of isolating cellulose ethers from the reaction mixture, so the skilled artisan would expect success using filtration in Haidasch's method. Haidasch does not teach whether the products are fibrous, but the skilled artisan would expect a fibrous product because Anderson et al. teach that fibrous cellulose ether products can be obtained from an operation which includes washing in hot water, which is part of Haidasch's process.

Haidasch does not teach the bulk density and particle distribution rate of the products. Because Haidasch does not employ a grinding or milling step, and because Schminke teaches that cellulose ethers prepared from pulverized cellulose, after washing with water, are finely divided and suitable for use as such, the skilled artisan would expect cellulose ethers prepared in this way to have desirable handling characteristics without the need for a grinding step. Since the Office does not have the facilities for preparing the claimed materials and comparing them with prior art inventions, the burden is on Applicant to show a novel or unobvious difference between the claimed product and the product of the prior art. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980).

Response to Arguments

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

The following rejection is maintained:

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6, 15, 16, and 18-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In the amendment submitted August 18, 2008, claim 1 was amended to include “consists of” in place of “comprises.” The specification as originally filed does not provide support for a method with consists of steps a-d. The method of Example 1 includes steps other than a-d, including addition of water and distribution using a sieve. This is a new matter rejection.

Response to Arguments

Applicant argues that addition of water is part of the filtering process. In Example 1 of the specification, addition of water occurs before the filtering process and the

mixture is stirred for 10 minutes before filtering. Thus, it appears that addition of water is separate from filtering and not simply part of the filtration process. Furthermore, the prior art teaches that hot water is used for washing cellulose ethers, which is also different from filtration. Thus, Applicant's argument is not persuasive.

Applicant argues that sieving does not change the end product formed by the claimed process because sieving merely separates out the particles greater than or equal to 100 mesh size. Claims 15, 16, and 19 are drawn to the production of cellulose ethers of a certain particle distribution and bulk density. It is the examiner's understanding that the limitation "particle distribution rate of greater than 99% for the particles of less than 100 mesh in size," means that 99% of the particles are smaller than 100 mesh. Thus, a step which separates out particles which are larger than 100 mesh would be expected to change the particle size distribution of the end product. The bulk density of the product could also be expected to change based on the particle size distribution. Thus, Applicant's argument is not persuasive.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAYLA BLAND whose telephone number is (571)272-9572. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anna Jiang can be reached on (571) 272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shaojia Anna Jiang/
Supervisory Patent Examiner, Art Unit 1623

/Layla Bland/
Examiner, Art Unit 1623